

1. A lightweight collapsible reel for cable, conduit or tubing comprising:
a pair of opposed, relatively thin, generally circular, coaxial end flanges of substantially
equal diameter and having wall structure defining a respective flange, each of said
flanges having a center point and opposed, inner, essentially parallel surface
5 portions;
at least three circumferentially spaced, foldable cable, conduit or tubing support units
positioned between said inner surfaces of the flanges and hingedly interconnecting
the flanges, each of the support units including a pair of elongated end-to-end leg
segments, and a device pivotally interconnecting the adjacent extremities of each
10 pair of leg segments, said adjacent extremities of each pair of end segments having
interacting components limiting relative pivoting motion of the segments of each
support unit from a folded position in which the segments are in folded overlying
relationship to extended disposition in which the segments of a respective support
unit are in an essentially straight line, said support units when extended supporting
15 cable or tubing wrapped around all of the extended support units between the inner
surface portions of the flanges;
pivot structure swingably attaching the outermost ends of the segments of each support unit
to respective opposed inner surfaces of the flanges,
said wall structure of the flanges having recesses for generally complementally receiving
20 a respective segment of each of the support units pivotally connected to a
corresponding flange in order that the overall thickness of the reel is not
substantially greater than the side by side thickness of the two flanges when the reel
is fully collapsed and the segments of the support units are moved from their
extended positions to their folded positions with the leg segments thereby received
25 in the recesses in respective flanges.

2. A collapsible reel as set forth in claim 1 wherein said flanges and the support units are
each of synthetic resin material.

30 3. A collapsible reel as set forth in claim 1 wherein said flanges and the support units have
wall structure configured to permit molding of each flange from a synthetic resin material.

4. A collapsible reel as set forth in claim 3 wherein each of said flanges and each of said leg segments of the support units are each configured to be molded in one-piece respectively.

5 5. A collapsible reel as set forth in claim 2 wherein the inner surface of each of the flanges is of generally flat configuration and the outer surface of respective flanges is of generally cellular configuration to decrease the weight of the reel while at the same time retaining the structural integrity of the flange.

10 6. A collapsible reel as set forth in claim 3 wherein the wall structure each of the molded flanges and each of the leg segments of the support units have a relatively tough, outer, abrasion resistant surface skin and a unitary interior of lower density than the outer surface skin.

15 7. A collapsible reel as set forth in claim 6 wherein said synthetic resin material inside of the skin contains a particulate solid additive for increasing the strength of the synthetic resin interior of the reel.

20 8. A collapsible reel as set forth in claim 6 wherein the interior of each of the molded flanges and each of the leg segments of the support units are of a synthetic resin material that decreases in density from the outer skin as the innermost part of a respective interior thereof is approached.

25 9. A collapsible reel as set forth in claim 7 wherein the synthetic resin interior portion material inside of the skin of each of the flanges is a synthetic resin material that contains a blowing agent that decreases the density of the interior portion of the flanges during molding thereof.

10 10. A collapsible reel as set forth in claim 3 wherein said synthetic resin material is a high density polythene resin.

30 11. A collapsible reel as set forth in claim 9 wherein the skin of each of the flanges and each of the leg segments of the support units are of polypropylene.

12. A collapsible reel as set forth in claim 4 wherein said pivot structure includes a pin molded in place in each of the flanges and pivotally supporting a respective leg segment of each of the support units adjacent the inner surface of a corresponding flange.

5 13. A collapsible reel as set forth in claim 4 wherein said device includes a pin molded in place in one of the end-to-end leg segments of a respective support unit and pivotally receiving the adjacent extremity of the other leg segment of the corresponding support unit.

10 14. A collapsible reel as set forth in claim 1 wherein said pivot structures attaching the outermost ends of the end segments of the support units are located in substantially equidistant, radially spaced relationship from the center point of respective end flanges.

15 15. A collapsible reel as set forth in claim 1 wherein each of the end-to-end leg segments of respective support units are provided with a plurality of reinforcement ribs extending longitudinally of each leg segment and spaced transversely of one another on each leg segment, said ribs being positioned to extend outwardly in opposite directions from one another when the support units are in the folded conditions thereof, said opposed surface portions of the flanges being provided with a series of said elongated recesses located to generally complementally receive the ribs of corresponding leg segments of each support unit when the support units are in their 20 folded conditions.

25 16. A collapsible reel as set forth in claim 1 wherein the outer portions of each of the flanges opposite the inner surface portions thereof are provided with a plurality of spaces located to decrease the overall weight of each flange without significant sacrifice to the structural strength of the flange.

17. A collapsible reel as set forth in claim 15, wherein each of the flanges has an outer circumferentially extending cellular, annular band.

30 18. A collapsible reel as set forth in claim 1 wherein each of the flanges has an outer circumferentially extending cellular, annular band, a central cellular section, and an intermediate cellular section between the outer cellular band and the central cellular section.

19. A collapsible reel as set forth in claim 17 wherein said intermediate cellular section has a series of generally radial, spaced webs extending between the central section and the outer cellular band and presenting open generally trapezoidally shaped areas.

5 20. A collapsible reel as set forth in claim 17 wherein said cellular band has a plurality of end-to-end rectangular open pockets.

21. A collapsible reel as set forth in claim 17 wherein said central section has a series of web segments presenting open generally polygonal areas.

10 22. A collapsible reel as set forth in claim 1 wherein the distance between the next adjacent ends of the support units pivotally attached to respective inner surface portions of the flanges is less than the width of respective support units.

15 23. A collapsible reel as set forth in claim 1 wherein the flanges are provided with coaxial center openings configured to receive a horizontal or upright support or guide rod or pipe for the reel having cable or tubing wound around the extended support units between the flanges.

20 24. A method of fabricating a collapsible reel as set forth in claim 1 wherein is included the steps of:

providing prefabricated molds for forming the end flanges and leg segments of the tubing supports; and

introducing a synthetic resin material into the molds to form the end flanges and the leg segments, at least the synthetic resin material introduced into a mold for the end flanges including a blowing agent so that upon forming of the end flanges, a relatively tough, skin of the synthetic resin material is formed over the outside surface of each of the flanges while the interior of the flanges is of lesser density than but fully supports the skin portion thereof.

25. A method of fabricating a collapsible reel as set forth in claim 1 wherein is included
in the steps of:

molding said leg segments as individual components;
providing a prefabricated mold for forming the wall structure of an end flange;
5 positioning one of the leg segments of each support unit in the mold with an outer surface
of the leg segment flush with an inner face of the flange formed in the mold; and
introducing a synthetic resin material into the mold which includes a blowing agent so that
upon forming of the end flange, a relatively tough, skin of the synthetic resin
material is formed over the outer surface of the flange while the interior of the wall
structure of the molded flange is of lesser density than but fully supports the skin
10 portion thereof.

15 26. A method of fabricating a collapsible reel as set forth in claim 25 wherein is included
the step of providing a pivot pin at one end of each of the leg segments prior to insertion of the leg
segment into the mold for the end flange.